

Claims

- [c1] 1.A metal halide lamp comprised of a ceramic discharge chamber containing an ionizable fill, said fill comprising Hg, and halides (H) of Na, Tl, alkaline earth metal, and $0 < \text{rare earth element (RE)} < 15\%$ as a molar fraction of halides.
- [c2] 2.The metal halide lamp of claim 1 wherein said fill further comprises Cs halide.
- [c3] 3.The metal halide lamp of claim 2 comprising molar fraction of halides in the following ranges:

| | % |
|-----|---------|
| REH | >0 – 15 |
| CsH | >0-15 |
| NaH | 45 – 86 |
| TlH | 2 – 5 |
| CaH | 15 – 45 |

- [c4] 4.The lamp of claim 1 wherein said rare earth element is selected from Ho, Dy, Tm, and mixtures thereof.
- [c5] 5.The lamp of claim 4 wherein said rare earth element is Ho.
- [c6] 6.The lamp of claim 1 having a power greater than 200 watts.
- [c7] 7.The lamp of claim 1 having a power between about 250 and 400 watts.
- [c8] 8.The lamp of claim 4 wherein said ionizable fill includes only a single rare earth element.
- [c9] 9.The lamp of claim 1 having a color temperature between about 2500 and 4500 ° K.
- [c10] 10.The lamp of claim 9 having a color temperature between about 2800 and 3200 ° K.
- [c11] 11.The lamp of claim 1 having an Ra greater than 80.
- [c12] 12.The lamp of claim 1 wherein said halide is selected from chlorine, bromine,

iodine and mixtures thereof.

- [c13] 13.The lamp of claim 1 wherein said alkaline earth metal comprises calcium.
- [c14] 14.The lamp of claim 1 having a molar ratio wherein:
$$2 \leq \text{NaH}/(\text{TIH} + \text{REH}_3) \leq 10.$$
- [c15] 15.The lamp of claim 13 wherein:
$$15\% \leq \text{CaH}/\text{total} < 45\%.$$
- [c16] 16.The lamp of claim 1 wherein:
$$0.85 < \text{power factor} < 0.90.$$
- [c17] 17.The lamp of claim 1 wherein:
$$80 < \text{Vop} < 110 \text{ volts vertical}$$
- [c18] 18.The lamp of claim 17 wherein:
$$90 < \text{Vop} < 120 \text{ volts horizontal}$$
- [c19] 19.The lamp of claim 1 wherein:
$$2\% \leq \text{TIH}/\text{total} \leq 5\%.$$
- [c20] 20.The lamp of claim 1 wherein:
$$4\% \leq \text{REH} \leq 8\%.$$
- [c21] 21.The lamp of claim 1 wherein:
$$45\% \leq \text{NaH} \leq 86\%.$$
- [c22] 22.A metal halide lamp comprised of a ceramic discharge chamber containing an ionizable fill, said fill comprising mercury, and halides of sodium, thallium, an alkaline earth metal and $0\% < \text{at least 3 rare earth elements} < 15\%$.
- [c23] 23.A metal halide lamp comprised of a ceramic discharge chamber containing an ionizable fill, said fill comprising mercury, and halides (H) of sodium, thallium, an alkaline earth metal, at least one rare earth element and cesium.
- [c24] 24.A dose for a metal halide lamp comprised of mercury, and halides (H) of sodium, thallium, an alkaline earth metal, at least three rare earth elements, and cesium.